

## THE CORRECT NAMES FOR "DIOSPYROS EBENASTER"

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THE NAME *Diospyros ebenaster* Retzius has been commonly applied to trees from the West Indies, Central America, South America, and many areas of tropical Asia. The tree and its fruit are known as black apple or sapotte negro. Collectors in both the New and the Old World have suggested that certain of their collections may represent cultivated plants, but some have considered the tree to be indigenous in all of the area cited. The occurrence of early historical records of this plant in botanical gardens suggests that its use by man may have been the basis for its introduction into new areas. It is reported to have an edible fruit, but either the quality of the fruit varies, or else individuals vary in their acceptance of its palatability, if one is to believe the conflicting reports. In both hemispheres, parts of the plant are used by the native peoples as a fish poison.

The peculiarly widespread distribution of this species has made it difficult to determine the country of origin. Scott (Kew Bull. 1915: 65. 1915), who reviewed thoroughly the existing literature regarding this species, pointed out that "the bulk of the evidence, then, points to *Diospyros Ebenaster* being introduced into the East Indies." He also pointed out that Urban (Symb. Ant. 4: 485. 1910) "is apparently convinced that the tree is a native of the West Indies" and that Duss' (Fl. Phan. Ant. Fr. 390. 1896) "discoveries leave us no doubt whatever, for he found the tree in various wild places" in Guadeloupe. Scott concluded that all records from Brazil seemed to indicate that the tree was cultivated, and he summarized his findings by saying that "from the evidence we have collected, therefore, we must conclude that the natural habitat of *Diospyros Ebenaster*, Retz., is in the West Indies. With regard to Mexico, it is evident from the references quoted . . . that the tree must have existed there for at least three centuries . . . It is very probable that the tree was introduced into Mexico by the Spaniards, but if this be correct, the introduction must have taken place at a very early date."

In Montserrat, I have been able to examine trees, called the black apple, which would be referred to *Diospyros ebenaster* and have also seen herbarium specimens of this plant from Cuba, Hispaniola, Puerto Rico, Guadeloupe, Marie Galante, and Dominica in the West Indies. Excluding the collections from Cuba and Haiti, not one of the sheets suggests a plant under cultivation, or anything other than a component of the natural vegetation. The trees in Montserrat were in native woodland in areas which have never been heavily cultivated, having been preserved historically as watershed areas. However, a total of seventeen collections from Mexico, British Honduras, and Costa Rica has been studied, of which three specimens are clearly indicated as being from cultivated plants. From these recent collections one might draw evidence in support of Scott's

conclusion that *D. ebenaster* is a native of the West Indies which has been introduced into Mexico and Central America. However, a study of the material from these two geographic areas indicates that two species are represented, and that it is the Mexican-Central American population which has been introduced into the Pacific area, Cuba, Haiti, and Brazil. The Mexican-Central American plants have oblong-lanceolate leaf blades evenly tapered at both ends or rounded at the base and bluntly acute at the apex. The venation is ascending and arcuate, anastomosing near the margin. The fruit is borne on a stout pedicel averaging 5 mm. in thickness and the fruit is 5–6 cm. in diameter. The fruiting calyx is 4–5 cm. in diameter with large, broadly ovate lobes, the whole calyx appearing undulate or wavy.

In contrast to this, the ample material obtained for the purpose of studying variation in Montserrat, supported by additional collections for the other islands of the Lesser Antilles, has, on the average, smaller leaves which are elliptic-oblong, narrowed at the base, and rounded, obtuse, or often emarginate at the apex. The blades appear to have had a heavier texture than those of plants from Central America. The venation is ascending, but is not arcuate until the veins bifurcate and anastomose near the margin of the blade. The fruit is smaller, averaging 3 cm. in diameter, although it is noted on *Hodge 2091* that the "fruits grow to 3  $\times$  the size of this specimen." More significant, however, is the shape and size of the fruiting calyx which, in the largest specimen available, is 1.5 cm. in diameter and almost square in surface view, with the calyx lobes scarcely indented and the whole calyx flat and coriaceous. Adequate flowering material is lacking from both geographic areas.

The evidence thus indicates that there are in the New World two species which have passed as *Diospyros ebenaster*. Herbarium specimens available from the Philippines and Malaysia may be clearly assigned to the taxon from Central America. Both species require names.

Bakhuizen van den Brink, in a revision of the Malaysian Ebenaceae (Bull. Jard. Bot. Buitenzorg III. 15: 316–320. 1938), considered *Diospyros ebenaster* Retzius to be a probable synonym of *D. ebenum* and renamed the material generally called *D. ebenaster* as *D. nigra* (Gmel.) Perrottet. Bakhuizen considered this species to be indigenous to the Antilles, Brazil, Mexico, Texas, and Florida, and both spontaneous and cultivated in the Philippines, Celebes, Mauritius, Réunion, Ceylon, and Malacca. In taking up *D. nigra*, Bakhuizen gave an extensive citation of both pre-Linnaean as well as post-Linnaean literature. The basic species cited and the supporting literature references, here partly rearranged, are the following:

***Diospyros nigra*** (J. F. Gmel.) Perrottet, Mém. Soc. Linn. Paris 3: 113. 1825.

*Sapota nigra* J. F. Gmelin, Syst. Nat. ed. 13. 2: 750. 1791.

*D. digyna* Jacq. Hort. Schoenbr. 3: 35. pl. 313. 1798.

*D. revoluta* Poir. in Lam. Encycl. Méth. Bot. 5: 435, no. 18. 1804.

- D. obtusifolia* Humb. & Bonpl. ex Willd. Sp. Pl. 4: 1112, no. 17. 1805; HBK. Nov. Gen. et Spec. Pl. 3: 253. *pl.* 247. 1818.  
*D. sapotanigra* A. DC. Ess. Prop. Méd. Pl. ed. 2. 200. 1816.  
*D. sapota* Roxb. Flor. Ind. ed. 2. 2: 535. 1832.  
*Sapota nigra* Blanco, Fl. Filip. 409. 1837.  
*D. nigra* Blanco, Fl. Filip. ed. 2. 211. 1845.  
*D. membranacea* A. DC. in DC. Prodr. Syst. Nat. 8: 227, no. 20. 1844.  
*D. laurifolia* A. Rich. Fl. Cub. in Ramon de la Sagra, Hist. Cuba 11: 86. 1853; Ramon de la Sagra, Icon. Fl. Cub. Pl. Vasc. *pl.* 55. 1863.  
*D. brasiliensis* Mart. ex Miq. in Mart. Flor. Bras. 7: 5. *pl.* 2, *fig.* 2. 1856.  
*D. Ebenaster* Hiern, Monogr. Eben. in Trans. Cambr. Phil. Soc. 12(1, 2): 244. no. 125. 1873, non Retzius.

Although two species are involved in the description and in the references given by Bakhuizen, the name he has chosen cannot be used for either one. Apparently Bakhuizen did not see the reference he used for Perrottet's epithet, for Perrottet did not transfer Gmelin's name, but described a new species. The article by Perrottet is short and reads "DIOSPYROS *nigra* Perr. Espèce nouvelle des Philippines que les créoles de Mascareigne appellent *Sapot negro*; son fruit est très-gros, assez semblable, pour la forme, au melon cantaloup galeux" (Mém. Soc. Linn. Paris 3: 113. 1825). Perrottet further indicated that the plant was cultivated in the Mascarene Islands and at Cayenne.

Gmelin (Syst. nat. ed. 13. 2: 750. 1791) in contrast, had based his description on the phrase "Sapote negro" used as a common name, although given with a description and illustration, by Sonnerat in his *Voyage à la Nouvelle Guinée* (p. 45. *pl.* 14-16. 1776) for a plant from the Philippines. Although Perrottet, Gmelin, and Sonnerat were all describing the same species, Gmelin's *Sapota nigra* cannot be transferred to *Diospyros* because of Perrottet's publication. It is also of interest to note that the same plant from the Philippines was described as new by Blanco as *Sapota nigra* (Fl. Filip. 409. 1837) and later transferred to *Diospyros* as *D. nigra* (Blanco) Blanco (Fl. Filip. ed. 2. 211. 1845).

The earliest available name for the Mexican-Central American plant introduced in the Pacific Islands is *Diospyros digyna* Jacquin, based on a plant grown in Austria from seeds collected in the Celebes. No type specimen of this species exists at Vienna, but the original ink drawing used in preparing the published illustration (Hortus Schoenbrunnensis 3: 35. *pl.* 313. 1798) is preserved in the Vienna herbarium. The illustration must suffice to typify the species. The drawing of the branch showing the leaves, their venation, and the position of the flowers, matches fairly well the Pacific Island material of "Sapote negro," as well as material from Mexico and Central America. The calyx, illustrated by Jacquin, appears to be that of a staminate flower. The pistil has a pubescent ovary typical of that found in recent collections examined from the Old World as well as Central America. The Jacquin illustration shows two styles, as indicated in the specific epithet, but a comparable abnormality has not been located in the staminate flowers examined. Certainly the majority of the char-



HOLOTYPE OF *DIOSPYROS MEMBRANACEA* A. DC. FROM MAURITIUS. (Prodromus Herbarium, Geneva.)

acteristics to be seen in the illustration are pertinent to the Central American species. The common name of "false mangosteen" may also be considered as support. The correct name and the synonymy of this species appears to be:

*Diospyros digyna* Jacq. Hort. Schoenbr. 3: 35. *pl.* 313. 1798.

*Sapota nigra* J. F. Gmelin, Syst. Nat. ed. 13. 2: 750. 1791.

*Diospyros obtusifolia* Humb. & Bonpl. ex Willd. Sp. Pl. 4: 1112. 1805; HBK.

Nov. Gen. Sp. Pl. 3: 253. *pl.* 247. 1818.

*Diospyros sapota* Roxb. Fl. Ind. ed. 2. 2: 535. 1832.

*Diospyros sapotanigra* A. DC. Ess. Prop. Méd. Pl. 200. 1816.

*Diospyros nigra* Perrottet, Mém. Soc. Linn. Paris. 3: 113. 1825.

*Sapota nigra* Blanco, Fl. Filip. 409. 1837, non Gmelin.

*Diospyros membranacea* A. DC. Prodr. 8: 227. 1844.

*Diospyros nigra* (Blanco) Blanco, Fl. Filip. ed. 2. 211. 1845, non Perrottet.

*Diospyros laurifolia* A. Rich. Fl. Cub. in Ramon de la Sagra, Hist. Cuba 11:

86. 1853; Ramon de la Sagra, Icon. Fl. Cub. Pl. Vasc. *pl.* 55. 1863.

Several of these synonyms have not been discussed above. *Diospyros obtusifolia* was based on a plant from Mexico and clearly is to be referred here. *Diospyros sapota* Roxb. has the same basionym as *Sapota nigra* Gmelin in a Sonnerat reference to a plant from the Philippines. *Diospyros sapotanigra* A. DC., attributed to Mexico, is a nomen nudum. *Diospyros laurifolia* A. Rich. is well illustrated and, although from Cuba, clearly refers to the Central American species and must represent an introduced plant. *Diospyros membranacea* A. DC. was based on a collection from Mauritius. A photograph of the holotype which was made available through the kindness of Dr. Charles Baehni indicates that this species is also to be referred here. Dr. R. E. Vaughan, of Reduit, Mauritius, has written me, "I have seen a specimen in the Paris Herbarium collected by Commerson in Mauritius C. 1769 so it has been here for a long time. It appears in a list of plants growing in the Botanical Gardens, Pamplemousses in 1785 under the name 'Sapote negro des Molucques.'"

I have seen no specimens determined as *Diospyros brasiliensis* which Miquel attributed to Martius (Flor. Bras. 7: 5. *pl.* 2, *fig.* 2. 1856), but the species was collected by Pohl in Brazil and, judging from the illustration, may well be assigned to the synonymy of *D. digyna*.

Bakhuizen's reference to *Diospyros nigra* occurring in Texas and Florida was not supported by cited specimens, and I have seen no cultivated specimens from either state.

The date or the path of the introduction and the distribution of the Mexican-Central American *sapote negro* to the Pacific area cannot be determined. It is clear, however, that the plants of the Pacific area called *Diospyros ebenaster* Retzius by many authors and *D. nigra* by Bakhuizen originated in Mexico-Central America and are correctly called *D. digyna* Jacq.

The native plant of the Lesser Antilles (with one record from Puerto Rico) is distinct, although previous authors have placed it with the species just discussed. The correct name for this plant is *Diospyros revoluta* Poiret (Lamarck, Encycl. Méth. Bot. 5: 435. 1806), and it was originally described as follows:

*Diospyros foliis obovatis, obtusis, glaberrimis; pedunculis solitariis, reflexis; calicibus profunde lobatis.* (N).

Les tiges des jeune rameaux sont striées, presque anguleuses, munies de feuilles alternes, pétiolées, coriaces, très-glabres, luisantes, ovales, rétrécies, aiguës à leur base, arrondies à leur sommet, longues de quatre à cinq pouces, larges au moins des deux, supportées par des pétioles très courts, marquées de nervures confluentes à leurs bords. Les fleurs sont axillaires, solitaires, munies de pédoncules courts, fortement recourbés: leur calice est glabre, persistant, coriace divisé en quatre grands lobes profonds, arrondis. Les quatre divisions du tube de la corolle sont également réfléchies en dehors sur le jeune fruit. Celui-ci est un baie glabre, arrondie, d'une médiocre grosseur.

Cette plant est originaire de l'Amérique méridionale. Elle a été communiquée par M. Vahl à M. Jussieu. [symbol for a shrub] (V. S. fruct. in herb. Juss.)

I have been unable to secure information regarding the existence of a specimen in the Jussieu Herbarium in Paris. In the Copenhagen herbarium there is a specimen studied by Vahl which was collected by Ryan in Montserrat. Associated with the specimen is a complete diagnosis in Latin, with the name *Diospyros revoluta*. The specimen was originally identified as *D. tetrasperma* Sw. and then considered to be a different and new species. Vahl sent the information, and perhaps a specimen, to Jussieu. The specimen and both the Latin and the French diagnoses agree with the Lesser Antillean plants commonly known as *D. ebenaster* Retzius. *Diospyros revoluta* apparently has not been transferred by man to other areas, and the following records appear to represent native plants of the West Indies.

DOMINICA: Calibishie, *W. H. & B. T. Hodge 3177* (GH); Laudat, *W. H. Hodge 2091* (GH); between Salybia and Concorde Valley in Carib Reserve, *W. H. & B. T. Hodge 3282* (GH); Pointe Rond to Milton Estate, *W. H. & B. T. Hodge 2676* (GH). MARIE GALANTE: Pointe de Folle Anse, *Proctor 21068* (A). MONTSERRAT: Without specific location, *Ryan* (type); Salem, *Shafer 559* (US), *Proctor 18897* (A), *Howard 15104, 15117* (A). PUERTO RICO: La Sardinera, *Britton 8508* (GH); Toa-alta, *Stahl 872* (GH).

This species is known as "babara" in Dominica and as the "black apple" in Montserrat. It is used as a fish poison in both areas.